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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,896	05/16/2006	Renato Bugge	BRW-002US	1816

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EXAMINER	
LANGMAN, JONATHAN C	
ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,896	BUGGE ET AL.	
	Examiner	Art Unit	
	JONATHAN C. LANGMAN	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *1-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/27/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of group II, claims 24-31in the reply filed on April 10, 2008 is acknowledged.

Claims 1-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 10, 2008.

Information Disclosure Statement

The information disclosure statement filed June 27, 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein, specifically references A2-A8, have not been considered.

Claim Objections

Claim 25 is objected to because of the following informalities: given that claim 25 depends on claim 24 in order to have proper antecedent basis, "A semiconductor device" should be changed to "The semiconductor structure". Also, the word "the" is before "whole" twice. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 24, the applicant is claiming an etched AlGaInAsSb layer as a part of a semiconductor device. The layer being etched by an etchant comprising three components. The components are taught by the applicant and in the art to remove material. This claim can be perceived in three ways:

1: The process of etching is given patentable weight,

2: The claim is considered a product by process claim, the etching is given no patentable weight, and any semiconductor device with an AlGaInAsSb layer in it will read on the instant claim; or

3: The claim is considered for its etching as layer removal, and the etching completely removes, the layer, wherein, the applicant is merely claiming a semiconductor device.

Scenario 2: Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is

unpatentable even though the prior product was made by a different process.", (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113). This claim is a product by process claim, where a layer is altered by a process, however the applicant has not shown what the etching does to the layer besides layer removal. Essentially, the final product of the instant claim will be a partially removed AlGaInAsSb layer or just any layer of AlGaInAsSb in a semiconductor device.

Scenario 3: However, one could go as far as to say that the etching could completely remove the layer of AlGaInAsSb, and therefore, the applicant is merely claiming a generic semiconductor device.

It is unclear as to what the etching does to the specific layer besides material removal and it is unclear as to how this etching differs the layer from the prior art.

In regards to claim 27, Claim 27 recites the limitation "the laser" and "optical waveguide". There is insufficient antecedent basis for these limitations in the claim.

In regards to claims 28 and 30, the phrase "or alike" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those

encompassed by "or alike"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

***Scenario 1:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 24 and 25 is rejected under 35 U.S.C. 102(b) as being anticipated by Boos et al., (US 5,798,540).

Boos et al. teach an electronic semiconductor device comprising layers of InAlAsSb, AlGaAsSb, etc. (col. 3, lines 20 and 45-50) layers that is p type doped (col. 3, lines 59-col. 4, lines 10), as is known in the art. Whereby a trench is etched by a wet etching solution comprising, lactic or acetic acid, hydrogen peroxide, and hydrofluoric acid (col. 4, lines 54-66). Lactic or acetic acid is an organic acid, and hydrogen peroxide is an oxidizing agent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boos et al., (US 5,798,540), as applied above, in view of Deryagin et al., "High Quality AlGaAsSb, AlGaAsSb and InGaAsSb epitaxial layers Grown by LPVE from Sb-rich melts".

Boos et al. teach an AlGaAsSb, where z equals zero, layer in a semiconductor device, whereby the layer is etched with an wet etchant comprising, an organic acid, oxidizing agent, and hydrofluoric acid. Boos et al. do not teach that these layers may be used in lasers, photodiodes, sensors, and LED's. Deryagin et al. teach that AlGaAsSb layers may be used in lasers, photodiodes, and Led's, (introduction). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use the semiconductor device and etching steps of Boos et al., to form and use the structure as an LED, Photodiode, sensor and Laser, as is known in the art.

Regarding claims 29-30, the semiconducting structure, is more than capable of being used as a part of a VCSEL or a PCDFL as is known in the art.

********Scenario 2:

Claims 24-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Hasenburg et al. (US 5,577,061).

Hasenburg et al. teach a mid infrared laser and laser diodes (col. 1, lines 19) comprising a semiconductor device comprising an AlGaAsSb layer (abstract). Hasenburg et al. does not teach etching with the instantly claimed etchant, however, the end product is still the same. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.", (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

Regarding claims 29-31, the semiconducting structure, is more than capable of being used as a part of as a part of an optical sensor, VCSEL or a PCDFL as is known in the art.

********Scenario 3

Claims 24-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Hasenburg et al. (US 5,577,061) or Deryagin et al., "High Quality AlGaAsSb, AlGaAsSb and InGaAsSb epitaxial layers Grown by LPVE from Sb-rich melts".

Hasenburg et al. and Deryagin et al. teach known infrared laser semiconductor devices, led's, heterolasers, photodetectors, etc. Hasenburg et al. teach a mid infrared laser and laser diodes (col. 1, lines 19) comprising a semiconductor device comprising an AlGaAsSb layer (abstract). Known semiconductor devices, may not teach the AlGaInAsSb layer etched by the instantly claimed etchant. However, if the etchant is used to etch away the entire AlGaInAsSb layer, then the end result will be just a semiconductor device that is used as a laser. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.", (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

Regarding claims 29-31, the semiconducting structure, is more than capable of being used as a part of an optical sensor ,VCSEL or a PCDFL as is known in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN C. LANGMAN whose telephone number is (571)272-4811. The examiner can normally be reached on Mon-Thurs 6:30 am - 4:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCL

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794